

WOLLENBERG GRAIN AND SEED ELEVATOR
133 Goodyear Avenue
Buffalo
Erie County
New York

HAER No. NY-242

HAER
NY
15-BUF
49-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA
REDUCED COPIES OF MEASURED DRAWINGS
PHOTOGRAPHS

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HISTORIC AMERICAN ENGINEERING RECORD

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Location: 133 Goodyear Ave., Buffalo, Erie County, New York

Date: 1912

Designer: C. H. A. Wannenwetsch & Co.

Builder: Unknown

Status: Not in use

Significance: The grain elevators of Buffalo comprise the most outstanding collection of extant grain elevators in the United States, and collectively represent the variety of construction materials, building forms, and technological innovations that revolutionized the handling of grain in this country.

Project Information: The documentation of Buffalo's grain elevators was prepared by the Historic American Engineering Record (HAER), National Park Service, in 1990 and 1991. The project was co-sponsored by the Industrial Heritage Committee, Inc., of Buffalo, Lorraine Pierro, President, with the cooperation of The Pillsbury Company, Mark Norton, Plant Manager, Walter Dutka, Senior Mechanical Engineer, and with the valuable assistance of Henry Baxter, Henry Wollenberg, and Jerry Malloy. The HAER documentation was prepared under the supervision of Robert Kapsch, Chief, HABS/HAER, and Eric DeLony, Chief and Principal Architect, HAER. The project was managed by Robbyn Jackson, Architect, HAER, and the team consisted of: Craig Strong, Supervising Architect; Todd Croteau, Christopher Payne, Patricia Reese, architects; Thomas Leary, Supervising Historian; John Healey, and Elizabeth Sholes, historians. Large-format photography was done by Jet Lowe, HAER photographer.

Historians: Thomas E. Leary, John R. Healey, Elizabeth C. Sholes, 1990-1991

This is one in a series of HAER reports for the Buffalo Grain Elevator Project. HAER No. NY-239, "Buffalo Grain Elevators," contains an overview history of the elevators. The following elevators have separate reports:

NY-240 Great Northern Elevator
NY-241 Standard Elevator
NY-242 Wollenberg Grain & Seed Elevator
NY-243 Concrete-Central Elevator
NY-244 Washburn Crosby Elevator
NY-245 Connecting Terminal Elevator
NY-246 Spencer Kellogg Elevator
NY-247 Cooperative Grange League Federation
NY-248 Electric Elevator
NY-249 American Elevator
NY-250 Perot Elevator
NY-251 Lake & Rail Elevator
NY-252 Marine "A" Elevator
NY-253 Superior Elevator
NY-254 Saskatchewan Cooperative Elevator
NY-256 Urban Elevator
NY-257 H-O Oats Elevator
NY-258 Kreiner Malting Elevator
NY-259 Meyer Malting Elevator
NY-260 Eastern States Elevator

In addition, the Appendix of HAER No. NY-239 contains brief notations on the following elevators:

Buffalo Cereal Elevator
Cloverleaf Milling Co. Elevator
Dakota Elevator
Dellwood Elevator
Great Eastern Elevator
Iron Elevator
John Kam Malting Elevator
Monarch Elevator
Pratt Foods Elevator
Ralston Purina Elevator
Riverside Malting Elevator

The Wollenberg Elevator, Buffalo's only surviving example of a wood crib-binned elevator, occupies an inland site alongside the tracks of the Belt Railroad. In size, the Wollenberg resembles a typical "country elevator" rather than the large waterfront wooden transfer elevators of which Marine "B," consumed by fire in the early 1960s, was the last survivor. The elevator's 25,000 bushel capacity is less than 1/40 that of the largest transfer elevators built in Buffalo during the closing years of the nineteenth century; Connecting Terminal had a capacity of 950,000 bushels and Export 1,000,000 bushels. The elevator and its accompanying mill were built in 1912 using second hand material made available after the demolition of the Kellogg "B" Elevator. Much of the structural timber work of the cupola shows signs of previous use, such as redundant bolt holes and joints, but it is unclear whether the crib work of the bins came from the same source.¹

Although concrete, steel and tile had largely superseded wood in the construction of large transfer elevators, the material was still popularly employed in agricultural areas for the construction of the typical "country elevator." By 1912 the cost advantages of wooden construction over fireproof materials was small. Although the initial costs were slightly lower, and presumably lower still if using second hand material, operating costs were undoubtedly higher. Insurance premiums for both the structure and its contents were substantially higher and the building required increased maintenance. The higher initial costs of fireproof construction could be partially defrayed by obtaining favorable terms on bank loans. However, the wooden elevator could be erected by simple construction methods that did not require sophisticated plants or detailed logistical planning. These advantages, combined with the ready availability of suitable second hand materials, appear to have suited the Wollenberg family business when it was establishing new premises in Buffalo.

The Wollenberg Elevator is an extremely conservative structure incorporating few of the design features intended to improve the performance and safety of wooden crib-binned elevators. From the outset, the machinery of the Wollenberg Elevator was driven by electric motors requiring little line shafting. Apart from the obvious improvements in safety and the reduction of risks compared with the steam-operated plants common in the riverside transfer houses, the use of electric power permitted the construction of a relatively simple structure without the features designed to reduce fire risk from line shafting. The wooden elevator is an inherently flexible structure. Under differing loading conditions, adjacent bins can subside relative to each other; subsidence figures of 18" have

been recorded in a 70' bin. These movements were transmitted to the cupola, which generally rested directly on the crib work of the bins. In a conventionally arranged elevator with one prime mover as a power source, the cupola framework supported the line shafting that drove the elevating heads.

Bin subsidence and the consequent flexure in the cupola caused the line shafting to run out of true, and the friction generated in the bearings was a frequent source of fire. Several solutions were adopted to eliminate the fire risk. Line shafting could be completely removed from the cupola. Robinson's patent relocated all line shafting to the basement, where there were no subsidence problems. Rope drives transmitted power to individual elevating heads and any other cupola machinery. An alternative approach patented by Metcalf was to provide jacks in the base of the cupola framework so that the entire cupola could be levelled according to circumstances. This solution required that telescopic sections be fitted in the casing of the elevating leg to accommodate the level changes. Alternatively, independent steel columns could be used to support the cupola from ground level. Such composite construction techniques were increasingly applied to wood crib-binned elevators during the last decade of the nineteenth century. More and more cupolas were constructed entirely of steel, as in the Husted Elevator, and concrete bin floors were introduced.

With the exception of its mass concrete foundations, the Wollenberg Elevator is entirely of wooden construction. A sub-basement accommodating the elevator boots is incorporated into the foundation works. The crib work rises directly from the foundations except where it would disrupt operations on the bagging floor or impede shipping and receiving processes. The crib work extends 38'-8" above the concrete and consists of 232 courses of 2" x 6" planks spiked together to form a laminated structure. Rather than breaking joint at the corners of individual bins, the timbers carry across the corners to form a continuous interlocking network within which the grain is contained. The bin bottom hoppering is provided by an inclined timber slab supported by 12" x 3" beams inserted within the crib work at the appropriate height and spanning the width of the bin.

Immediately above the sub-basement is the bagging floor into which the shallower shipping bins spout. The bagging floor does not occupy the entire area of the site, but extends below the longitudinal center line of the building and along both side elevations in an I-shaped configuration. The area between the top and bottom strokes of the I is occupied by the deeper main bins extending from the foundation works. Along both side elevations of the elevator are openings to provide access to the road loading platforms (along the southwest elevation) and the

railroad track (along the northeast elevation). Where the crib work is raised above the foundations, it is supported on 1' x 1' uprights and a network of 6' x 1' beams to provide 8'-6" headroom for the sacking floor. In these locations, the bin walls are 174 courses of 2" x 6" planks structurally integrated into the adjoining crib work that rises from foundation level.

The elevator's total capacity of 25,000 bushels is accommodated in twenty bins of varying plans and heights. The basic division of space is into four rows of three units. These bins are transversely 10' wide with varying longitudinal dimensions. Those along the side elevations--the northeast railroad side and the southwest millyard--are 7'-8" across, while the remainder are 9'-2". The four main bins measure 10' x 9'-2" and have a capacity of 3,400 bushels. These bins occupy the middle two sub-divisions along each long elevation, extend from the foundations to the bin floor, and have a depth of 37'-9". They are hopped at an angle of only 30° and the draw-off is positioned close to the central transverse bin wall. These bins spout to the elevator boots located in the sub-basement. The southernmost main bin adjoining the mill is horizontally sub-divided. A hopper bottom 6' below the bin floor provides a feed function to the mill. Each of the two 10' x 9'-2" spaces in the center of the structure between the four main bins described above is further divided into four small bins measuring 4'-4" x 4'-9". The sub-division is provided by crib work to the same dimensions as the adjoining building within which it is structurally integrated. These bins are raised above the sacking floor, and are supported on a network of 1' x 1' beams inserted into and spanning the crib walls of the adjoining main bins that extend to the foundations. The bins are 28'-9" deep, and all eight have a capacity of 400 bushels. They are numbered from seven to fourteen.

The hopping is provided in the conventional manner, with 10' x 2-1/2" timbers inserted into and spanning the crib walling. The bins discharge centrally to the sacking apparatus in the sacking floor below. Each of the three 7'-9" x 10' spaces along the southwest side elevation is divided into two 7'-9" x 4'-9" bins, creating six bins along this side of the structure. These bins have a capacity of 810 bushels each and are 30'-6" deep. They are numbered from fifteen through twenty, and, like the small bins in the central area, are raised above the sacking floor. Each of the bins has two draw-off spouts. The bins discharge to the sacking apparatus of the sacking floor. Of the three 7'-8" spaces along the northeast side elevation, only two are used for storage. The central space accommodates stairs, personnel elevator and elevator leg. Although the bins to either side are not divided, they do not extend to the foundations and have hopper bottoms positioned above the sacking floor. These

bins, numbered five and six, have a capacity of 1,700 bushels. The bins are covered by a timber bin floor.

The elevator features a characteristic monitor style high cupola that rises 27'-8" above the bin floor to a total height of 71' above ground level. It extends along the length of the building about the center line of the building, is 18' wide and has a pitched roof. Mono-pitched roofs are placed to either side of the high cupola and rise directly from the outer edge of the bin floor to form the low cupola. The high cupola houses the cleaning and weighing machinery and, within the pitched roof, the elevating heads and drives. The basic cupola is a frame of 8" x 8" beams and 8" x 5" uprights braced by 8" x 8" diagonals. The uprights are placed above the intersections of the crib work on centers that coincide with the three rows of four principle bin units. Cleaning and clipping machinery, together with the elevator heads and their motors, is supported on this structure. However, the main scale hopper and the weighing machinery is supported on a separate framework of 12" x 12" timbers born by the crib walls. The outer walls are framed with 6" x 2" timbers. Both cupola and crib work are clad in corrugated iron.

The timber mill northwest of the elevator was built at the same time and is an integral part of the structure. The mill measures 40' x 40' and has a 39' high workhouse that accommodates three small crib work bins. The site includes a feed store measuring 42' x 25'.

BUSINESS HISTORY

The Wollenberg Grain & Seed Elevator is the only surviving "country" elevator of the type that once dotted the landscape both inland and along the Buffalo River. The elevator was built in 1912 of wood salvaged from the original wooden Spencer Kellogg Elevator that was dismantled to provide space for that company's new concrete elevator. Designed by C. H. A. Wannenwetsch & Co., the Wollenberg Elevator incorporated many of the traditional features of a country elevator, rather than the more contemporary measures employed elsewhere in Buffalo. The elevator stands as a surviving link between old and new, rural and urban, and provides a visual reminder of both constancy and change in grain elevator technology and design.²

Unlike many of the surviving concrete elevators erected in the same years of the early twentieth century, the Wollenberg Elevator was not begun by a prominent businessman or even someone with a long-standing history in the grain trade. Henry

Wollenberg came to America from Germany where his relatives were tenant farmers. When he arrived in Buffalo, his chosen destination, he began work on Buffalo's docks as a laborer. His first effort to support his family was a small business selling milk by cart.

Wollenberg then turned to the coal and wood business, eventually establishing an outlet at 363 East North Street. Henry's son, Louis, worked for a jeweler, played in an orchestra, and joined his father in the small family business before departing for Michigan to live with cousins who were substantial farmers. The trip proved worthwhile, and Louis became a hay broker, shipping some of the hay back to Buffalo to be sold along with the wood and coal. Soon the family was retailing grain at the North Street location and at a second site on Sycamore Street along the New York Central "Belt Line" where the first feed mill was erected.³

After four years in Michigan, Louis returned to Buffalo and borrowed money to begin a second, larger elevator and mill on 133 Goodyear at the corner of Koons Avenue alongside a spur line from the New York Central Railroad. Henry agreed to the loan with the proviso that Louis take his brother, John, into the venture as a partner. Wollenberg Bros., like H. Wollenberg & Son, traded in grain, hay, and coal, taking over the father's operations under the partnership name and operating at all three sites--Goodyear, Sycamore, and North--until fire destroyed the Sycamore Street business. The new company elected not to rebuild the Sycamore Street feed mill since the recent creation of a railroad overpass raised the tracks and wiped out the Wollenberg siding. Operations were therefore concentrated on Goodyear which, with its good railroad access and central location, became a small but flourishing business.⁴

Louis Wollenberg carried on the mill and elevator until his retirement in 1936; John remained active with the business until 1952. At that time John sold the operation to Fred Babin and his son Richard who converted the elevator to a bird seed mill with side lines in seeds, minerals, and dog kibble discontinuing the grain and hay business. In addition the Babins bowed to the changing nature of the surrounding neighborhood and ended sales of chicken, cow, and other large animal feeds. As the city encroached on the land, farms were increasingly far away, and farmers were no longer coming into the city for their needs. The mineral production was on contract with Robert Gray of Springville, New York, who placed and owned the machinery used by the Babins.⁵

The mill continued to supply primarily the pet food market,

mostly bird seed, until 1987. The availability of pre-packaged seed in more convenient retail locations eradicated much of the elevator's own business, and the elevator and mill were in no position to supply a wholesale trade.⁶ Since its closing, the elevator has stood idle, but the presence of a caretaker and the structure's sound construction has kept it in remarkably good condition. The elevator's fate remains uncertain, however, as it survives in an increasingly deteriorating neighborhood that has already been assaulted by arson.

MATERIALS HANDLING: HISTORY AND DESCRIPTION

Although the timber crib construction of its bins harkens back to an earlier era, the movement of grain at the Wollenberg was not typical of Buffalo's nineteenth-century waterfront elevators due to its location, size and the nature of its products. Aside from the obvious absence of the marine leg first devised by Robert Dunbar for Joseph Dart's pioneer elevator, the Wollenberg's 35,000-bushel storage capacity required no horizontal conveying equipment in the form of either screws or belting. Since fixed spouting, supplemented by a few portable bin floor spouts, sufficed in routing grain to various locations, there was no call for universal spouts of the type installed at Great Northern for multiple distribution to storage, cleaning machinery or shipping facilities. Finally, since feed or seed products were shipped in bags rather than in bulk form, the Wollenberg also lacked the dock and car spouts required for intermodal transfer to canal barges or railroads--the principal function of the vanished wooden waterfront terminal elevators. In form and scale, the Wollenberg's closest relatives among the family of North American elevators may be found among the country stations that took deliveries from farmers' wagons to be forwarded in boxcars, thus initiating the great movement of grain from the midcontinental prairies to the Atlantic Seaboard. However, at the Wollenberg, the usual sequence of country elevator operations was, in effect, reversed since grain was received in bulk via rail and shipped out in smaller bagged lots.

Feed ingredients arriving on the Wollenberg rail siding to the north of the elevator were unloaded by means of a power shovel with a belt-driven winch powered by a motor located in the basement. As no transfer belt was required to handle grain emptied from boxcars, the contents were fed directly into a subterranean hopper and elevated about 70' to the top of the building by the single receiving leg. Since the rate of elevation did not exceed the capacity of the scale, there was no need for a receiving garner. Grain was discharged over the head pulley and through a spout directly into the scale hopper. A set of Fairbanks scales was used for instore weighing. Grain was then

discharged through a revolving spout and portable bin floor spouts into the four principal storage bins or, if no cleaning was required, into the appropriate shipping bins. Two of the fourteen shipping bins were dedicated to feed ingredients ready for bagging upon receipt, and seven other bins could accommodate such grain on occasion.

Grain was spouted from storage to the boot of the single distribution leg for further processing and reelevation. From the head pulley, grain might be spouted into the adjacent feed mill via a hopper located in bin No. 4. Ingredients that did not require milling could be routed to the conditioning equipment on the scale floor. The extant machinery in the cupola consists of a cleaner and an oat clipper. From the cleaning machinery, grain could be spouted to one of twelve shipping bins in which conditioned grain was eventually mixed with milled products, special bagged ingredients such as sunflower seed or millet, and wheat or barley from the main storage bins. All of these feed components, except grain that had been run through the cleaners, reached the distribution leg through spouting or manual handling prior to reelevation. The various feed mixtures in the shipping bins were periodically drawn off to bagging machines on the sacking floor, weighed on a outstore balance scale, and shipped via vehicle or rail.

ENDNOTES

1. The following paragraphs are based on information from original plans housed in Buffalo City Hall, HAER field measurements, and personal conversation with Mr. H. Wollenberg.
2. Richard Wollenberg, Manuscript Family History, c. 1990; Inspection Report, Miller's Mutual Insurance Co., January 11, 1972, Courtesy Bruce Hinman, Miller's Mutual; Buffalo City Hall, Permits and Plans, Wollenberg Blueprints, Bin F-30.
3. Wollenberg, MS.; Buffalo City Directory, 1910, 1912.
4. Wollenberg, MS.
5. Inspection Report, Miller's Mutual.
6. Richard Wollenberg, Interview by John Healey, October 1990.

SOURCES CONSULTED

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#37802 (30 October 1912)

#40366 (6 October 1913)

#46641 (9 October 1915)

#59679 (30 October 1919)

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Inspection Report, Miller's Mutual Insurance Co., January 11,
1972, Courtesy Bruce Hinman, Miller's Mutual.

Site Plan (1 February 1972), courtesy: Bruce Hinman, Michigan
Millers Mutual Insurance Co., PO Box 30060, Lansing, MI
48909-7560.

Wollenberg, Richard. Manuscript Family History, c. 1990.

Wollenberg, Richard. Interview by John Healey, October 1990.